Overview and Progress in CTBT Research and Development at the United States Department of Energy

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The Department of Energy supports the US National Data Center (NDC) in all aspects of Comprehensive Test Ban Treaty monitoring research and development. This includes all monitoring environments and all elements of the proposed International Monitoring System (IMS) as well as on-site inspection methods and national technical means. For monitoring the underground environment, we are working on the regional calibration of stations for location and identification of seismic events and have developed a new miniaturized seismometer. Similarly for the underwater environment, we are working on the calibration of hydroacoustic stations for event location. To monitor the atmospheric environment, we have developed two new automatic radioactive particle samplers and a new infrasound microphone. All four of these new instruments were developed to meet or exceed IMS monitoring specifications as determined by the Geneva experts and will soon be available from commercial sources. In addition, we are developing an automated Xenon gas collector and a new generation of satellite sensors. For on-site inspection, we have carried out field experiments on aftershocks and radioactive gas seepage. For the US NDC and to make the analyst's job easier, we are working on ways to process large numbers of events quickly, using data from all sources, and are creating a knowledge database to facilitate the analysis. Much of what we are doing or have done is now available via the internet.

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